Brown (Thos. R.)

URETHRAL FEVER.

BY

THOMAS R. BROWN, M. D.,

PROFESSOR OF CLINICAL AND OPERATIVE SURGERY AND DISEASES OF THE GENITO-URINARY ORGANS, COLLEGE OF PHYSICIANS AND SURGEONS, BALTIMORE, MD.

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URETHRAL FEVER.[1]

The subject of this paper—"Urethral Fever"—has been selected chiefly because of its importance, which, to the man who is called upon to treat the diseases of the urethra often, as well as to the general practitioner, can scarcely be exaggerated. Besides this, is the disagreement as to what the term implies. As a celebrated genito-urinary surgeon has stated, "there is an obscurity and uncertainty which surrounds that condition known as urethral fever which has not yet been entirely cleared up." Many able and recent efforts to relieve this obscurity have been made, but their chief office seems rather to evidence the fertility and ingenuity of the authors than to carry conviction, or to serve any very useful purpose. They are eminently disquisitive, but do not seem to be very practical.

It is highly probable that my comments to-night may have to be placed in the same category of comparatively useless material. It is of the first importance that some sort of an understanding or agreement should be had as to what we pro-

[1] The subject of an address before the Medical and Surgical Society of Baltimore, Md., September 13, 1877.

pose to discuss, and this we reach by a definition which should be kept well in hand.

Urethral fever, like any other fever, presumes elevated temperature, or pyrexia, which may be or not ushered in by a rigor, and which may be or not ushered out by a sweat. The more or less frequent occurrence of both rigors and sweats all through the paroxysm cannot, however, affect the accuracy of this definition. The prefix "urethral" is used to indicate that these phenomena succeed to the treatment—by far the most frequently surgical—of the urethra. This treatment may be either of the mildest or gravest description, such as the most smoothly or skillfully performed catheterism, or as the most formidable procedure for the cure of strictures, or for the removal of calculi. It is, moreover, a part of the syllogism, that no condition of health or temperament appears to exempt from, or predispose to, an attack. Neither in the frail nor in the robust, neither in the nervous nor in the stoical, does there seem to be any rule of occurrence.

It also is important to an intelligent view of the subject that the scope of the definition given should be limited. It is here that we can look for and find something to explain the obscurity. There should not be included under the head of "urethral fever" those morbid conditions which have no other claim for being so considered beyond that of coincidence. For example, it is obviously improper to class with this disease cases of extravasation of urine resulting from false passage, in which the symptoms are mostly those which are due to the toxic influence of decomposed urine circulating with the blood. I refer to that condition which we now describe as urinæmia in contrast with uræmia—a difference in terms which future observation may not permit. No matter what the cause, nor where this urinous leakage, the symptoms which it induces are the same.

I am not unmindful of a *fact* already briefly touched upon before this society, namely, the comparative harmlessness of extravasations of limpid, healthy urine, as demonstrated by actual experiment.

According to Van Buren, "Menzel first used acid urine,

injecting it under the skin of several dogs, in quantities varying from a drachm to an ounce, without any bad effects." In another instance he dissected up the skin of a dog to the extent of four inches, and then introduced eight ounces of healthy human urine. This he repeated in four cases. In three of these the entire urine disappeared by absorption in four days, without any local injury, and in the last, as I read the experiment, there was absorption with local suppuration of a healthy character. The same result followed the insertion of the urine into the ischio-rectal fossa.

Years ago Simon (Van Buren), the distinguished German surgeon, held that extravasation of urine caused gangrene, by the rapid compression and distention of the tissues into which the effusion took place.

For the purpose of testing this, Menzel performed two experiments, which strike one as wellnigh conclusive. In the first, the quantity injected measured one-half of a pint, and in the other we are left to measure the quantity by the size of the tumor, which was that of a fœtal head. In both, absorption had taken place in three days, without any bad symptoms. To meet the objection that all these tests were applied to parts possessing a circulation and structure somewhat different from those parts into which the infiltrations naturally occur, he experimented upon the genitals. Here the results were the same, possibly with the exception of a difference in the rate of absorption. There was no toxæmia, nor any necrosis of tissues more than was caused by the formation of fistulæ, through which the unabsorbed urine passed in some instances. Some of the above experiments have been repeated, and the opinions of Menzel confirmed.

Dr. Partridge, at the instance of Prof. Van Buren, at the Charity Hospital, New York, made a number of hypodermic injections of healthy urine upon white and negro patients, who were left under the impression that they were receiving morphia. The quantity used was from one-half to one drachm, and in not one case did abscess appear, or any kindred lesion.

Velpeau has had a similar experience. The same results

have followed the use of urine which was rich in urates, as obtained from patients suffering with acute inflammatory rheumatism. Urine alkalinized with soda or potash has proved innocuous; but, when its alkalinity depends upon the presence of ammonia, an altogether different result ensues. When it is injected under the skin, no matter where, almost invariably there follow abscesses; in some cases gangrene; in others, symptoms of blood-poisoning are present.

The outcome of such experiments is, that given healthy urine and healthy tissue—tissue not contused nor inflamed, therefore in a condition which will favor more or less rapid absorption—extravasations of urine are of no more serious import than are those of the blandest fluid. Hence it is that certain propositions are offered and almost generally accepted: "1. That normal urine does not possess septic qualities, and does not produce gangrene by its chemical properties; 2. That distention by infiltrated urine does not produce gangrene; 3. That gangrene, when it does occur, is caused by contusion of the tissues into which the effusion takes place by the accidental inoculation of septic matter," or the ammoniacal decomposition. This latter condition, as in part just stated, is favored by any interruption to absorption, or to the prompt and complete emptying of the bladder—in short, what favors accumulation favors decomposition. In the face of the evidence it is needless to extend the range of this question, and almost as superfluous it would appear to reinsist upon the holding of those morbid processes and symptoms which result from the absorption of urine, as apart from and extraneous to genuine *urethral fever:* the one quite definite in character, specific in origin, and causing such effects as can invariably be described as toxic; the other less definite, seemingly not dependent upon the distribution of any poison, and presenting all the vagaries of an un-understood nerve-disorder: the one infrequent, the other common, and to that extent at least the interdependence disestablished. I feel, therefore, that Gérard in his monogram, "Resorption urineuse et urémie dans les maladies des voies urinaires," is engaged in the discussion of a totally distinct subject from "urethral fever," and of one be-

longing to a class of diseases altogether unlike those published in the *Edinburgh Medical Journal*, under the caption of "Certain Rapidly-Fatal Cases of Urethral Fever after Catheterism," in which the symptoms have strong resemblance to traumatic, surgical, or irritative fever of a violent form. Under these circumstances, I say—urethral and urinary fever discussed and described as synonymous terms, diseases distinct considered as diseases with a common pathology—is there any wonder that "the uncertainty which surrounds that condition known as urethral fever has not yet been entirely cleared up?" With a view of stripping the nomenclature of all but its real belongings, of putting the disease where it should be properly placed—among the reflex disorders entirely—and of supporting this classification by strong proof, has this subject been chosen.

When I say reflex, I am aware of the more or less vague notion which we are compelled to hold concerning this "reflex system," if system it be. From the very nature of things vital it could scarcely be otherwise. It is one of those domains of physiology which, marked by obscurity, is very full of impenetrable mysteries, defies every attempt to reveal the essence of its existence, and is about as indeterminate and as little understood as irritation itself, which calls it into action. We must know it by its outward expressions, and not by what it is; but it is to-day a thing in the animal economy, to the existence of which almost as common and universal consent is given as is given to the function of vision, of taste, and of smell, despite its hidden nature. So far is this reflex principle settled, that men do not hesitate to formulate a chain of reasoning upon it. So far is it accepted as one of our cardinal truths, that we find Stuart Mill, in his "System of Logic," including it among "the miscellaneous examples of the explanation of the laws of Nature;" and, finally, so far is it accepted that experience has taught us that, when it is seriously interfered with, disease, and sometimes death, follows.

Might I be permitted to adduce here some examples of its importance, and instances, no doubt familiar, where both functional and structural troubles follow its perturbation, as, in part, given by Brown-Séquard:

The production of tears in one eye from irritation of the other, or of the mucous membrane of the nose.

The increased secretions of the eye or nose which follow the exposure of other parts of the body to "cold."

The occurrence of cataract in one eye after similar disease in the other, or after neuralgia of, or injury to, the frontal nerve.

The phenomena of sudden stoppage of the heart's action after receiving an injury or blow upon the abdomen, which is said to be preventable by neurotomy.

The curious duodenal ulcer which occasionally follows burns.

Those instances of distorted vision, said to have amounted, in some cases, to a complete loss, which have been caused by neuralgia, and cured by the extraction of a carious tooth.

The interesting example of paraplegia which Prof. Brown-Séquard himself cured by slitting a contracted prepuce, thereby remedying an offensive balanitis.[1] The case recorded by Sir Benjamin Brodie, in which the division of a close urethral stricture relieved a pain over one heel, which had lasted long and given great annoyance. Those cases of urethral spasm caused by fright, anxiety, shame, modesty, alcoholic excess, and a host of other illustrations which I might give. These are presented not as something at present unknown or new, but simply as reminders. They all agree in demonstrating: 1. That "the action which one part of the nervous system exerts over another part, and which we call reflex, is without any intermediate action on the brain, and, consequently, without consciousness." 2. That that condition of which we speak as irritation, either active or passive, is the force which produces this action.

With such facts as these before us, our case is clearer. If this same irritation, with its reflex action, can cause such disorders as excessive lachrymation, pain, spasm, ulceration, cataract, paralysis, loss of vision, etc., surely it can ex-

[1] I do not overlook here Leyden's claim of continuous neuritis. It seems to be simply a claim for the present.

plain and cause the occurrence of attacks of urethral fever without invoking the aid of septic, urinous, or purulent resorption. It is here that the disease is to be studied, and its pathology, in part, to be rewritten. (In passing, I deem it proper to say that I have not overlooked the evidence which the above examples are supposed to offer of a system of trophic nerves.) This being offered as the pathology, I am the better prepared to present a hasty description of the clinical history. For very obvious reasons, if my argument be sound, there has been as little agreement upon this as upon the pathology. The arrangement of the varieties has been inexact, and therefore much of what is current must be rejected. The origin of all the forms of the disease being common—reflex—the subdivision of these forms will be such as is suggested by the intensity of the attacks, and is justified by actual bedside experience.

For the sake of convenience, I have divided these into three, it being expressly understood that this division cannot be always rigidly adhered to. The first and *most common* variety is where a fever, with a temperature generally not exceeding 101° Fahr., preceded by a chill, which may be mild or pronounced, is succeeded by nausea or vomiting, by sweating, sometimes profuse, and anorexia, with *malaise*. In many of these cases the expression of weariness during the attack is striking. As a rule, this form makes its appearance almost immediately after the operation, and will probably have left no trace by the next day, *provided the patient's urethra be not handled*. It may come on after the introduction of the catheter, or after a severe urethral operation. The following cases in point I submit from my own practice:

Mr. S., aged about fifty years, suffering from retention of urine, with dribbling—some pain with urination—consults me with an enlarged prostate. Inasmuch as most of the symptoms and distress in these cases are referable to the bladder, caused by a certain amount of residual urine, anodyne injections through the catheter were directed. After the most of the injections, not all, sometimes immediately, sometimes delayed for several hours, a group of symptoms, corresponding

closely to those described above, set in. The next morning the patient would feel well. Indeed, so trifling was the trouble that the patient became himself indifferent to it, and at no time was the treatment suspended on account of it. The instrumentations were bloodless, but always more or less painful. For some reason or another there were times when the catheter could be passed without an attack. In this respect the case is typical. It is, moreover, important to note that neither quinine nor any other antiperiodic seemed to exercise much, if any, control over the attacks. The same may as well be said now in respect to the use of quinine previous to other and graver urethral operations. In nearly every one of a very large number of strictures treated by internal urethrotomy, I have taken all the precautions usually urged, including the giving of quinine and morphia in ten-grain and quarter-grain doses, respectively. The very frequent occurrence of urethral fevers after the operations, despite all of these precautions, has been to leave me decidedly in doubt as to whether this medicine affected the result or not. What it might have been without it I am not prepared to say. I refer only to its influence as a prophylactic.

As a second illustration of cases where this mild form of the disease succeeds to a severer operation than that of catheterism, I present the case of Mr. K. He consulted me, November, 1876, on account of a gleet which had continued through a number of years, notwithstanding the use of the customary remedies. Upon examination a stricture was found, between three and four inches from the meatus, which was too close to admit the urethrometer. After a dilatation, by means of the Thompson divulsor, sufficient to pass the urethrotome of Otis, and a slitting of the meatus, the stricture was freely divided, opening the urethra to the required calibre. Upon the withdrawal of the urethrotome, the blades of which had been previously closed, it was found to have engaged a slip from the urethra, which was detached completely—an accident possible under any circumstances, and avoidable by my present practice of never closing the instrument entirely when about to remove it. In this case there resulted nothing worse than what occurred in the preceding case. Almost immedi-

ately he had a sharp chill, followed by fever, sweat, loss of appetite for one or two meals succeeding the operation, and some languor, all of which had disappeared after a night's rest. His sudden loss of appetite was strikingly in contrast with his normal condition, which seemed to be one of wellnigh insatiable hunger. In neither of these cases was there suppression of the urine, which was voided with some smarting, but without any rigor. In the two patients the seats of disease, it may be remarked, were different. In the first, it was in the prostatic urethra, and all treatment was required to traverse the entire canal. In the second, the location of the disease was in the front or penile urethra. I mention these facts, because it is said that attacks of urethral fever occur in by far the larger number of cases in which the urethral curve has been treated. This I am prepared to verify. I am sure that there are some men with whom explorations of the spongy urethra are accompanied with no untoward symptoms, but whose membranous and prostatic urethra are very intolerant. I also know of another instance which I regard as very exceptional, that of a distinguished man in our profession, whose entire urethra is so very sensitive that on more than one occasion the most alarming symptoms have followed the bare introduction of a gum instrument. These, as I say, are unusual.

In the second variety of this disease the difference lies not only in the increased severity of the symptoms, but in the addition of icterus—certain mental disorders, which may amount to delirium—and in the delay in the arrival of the attack. In order that cases may be classed in this stage, I consider it necessary that the icterus and certain mental troubles be present. I can the best illustrate this variety, as before, by the narration of cases which have come under my own observation.

Mr. C., a resident of the Eastern Shore of Maryland, while in the city May 20, 1877, was compelled to consult his physician, Dr. Salzer, because of complete retention of the urine. Catheters, at first solid and then gum, first one size and then another, were introduced without reaching the bladder. When seen by me he was in great distress, which I could not relieve

with the catheter. At 2 P. M., May 31st, aspiration[1] by the suprapubic puncture was performed, which gave immediate relief, and, as usual after such operations, there were no bad effects due to it. There was a history of an attack of gonorrhœa some years previous, which, from his accounts, was soon cured. Since that time the stream has steadily diminished in size. When seen by me at 7 P. M. on the same day, the bladder had refilled. Under the influence of ether, a stricture in the membranous urethra was stretched with the Thompson instrument, a double catheter passed and afterward secured. From Thursday to Saturday his urine was passed through this artificial channel without anything unusual happening. On the latter day internal urethrotomy, with Prof. Otis's urethrotome, was performed, cutting the urethra so as to easily admit a No. 32 F. About ten hours after the operation there was a severe chill, followed by a fever, with rapid and bounding pulse; temperature 104°; with quite constant vomiting. The next morning, while the febrile symptoms had somewhat abated, there were complete anorexia, icterus, and listlessness, with a tendency to drowsiness. The patient had passed a restless night. Notwithstanding that the patient was cinchonized from ten-grain doses of quinia, frequently repeated, the rigor returned in twenty-four hours with no recurrence. After the attack was completely under control, the patient went on to a rapid recovery, and in about one week after defervescence the passage of sounds begun. At no time was there any other change in the renal secretion than could be explained by the high temperature.

During the continuance of the fever, and as noted for one week after, no instrument passed the urethra, a rule which cannot be observed too closely. The decline of the fever, together with the other untoward symptoms, was marked

[1] I have performed a similar aspiration of the bladder a sufficient number of times to convince me of its being a far safer and less painful method of relieving *retention* than is the usual mode of catheterization. The latter I regard, both in spasmodic and organic obstruction, as providing relief less prompt, and a risk of damaging the urethra, which ought to be avoided if possible. In the first there is no risk of urethral fever, at least.

in this, as in other similar cases, by the returning desire for food.

It is not necessary to relate *in extenso* the second case of this class, which, upon the whole, resembled the one just cited—the only difference being in the severity of the operation. In this case a very interesting fact was observed—that the rigors and vomiting did not cease until a catheter had been fastened in, which became necessary because of spasm of the urethra preventing the patient's making water. With these, the high temperature and rapid pulse—104° and 120 respectively—which appeared in six hours, soon began to decline, an incident which apparently conflicts with the precaution urged in the case of Mr. C. Another point of interest is that of a peculiar rigor or trembling which would pass over the patient *while under the influence of ether* whenever an instrument was inserted. It may confine itself to certain muscles, like the pectoralis major, or may cover the whole body, carrying with it a suggestion of the patient's chilliness, as indicated by his reaching for extra covering. I have seen this often, and at first regarded it as ominous for evil, but a subs quent experience has dispelled any apprehensions that I might have had. Its only significance seems to be that it insures an earlier attack of urethral fever which may still be slight.

The third and last variety of this disease includes all those cases in which the reflex action is much more marked, and in addition come the symptoms of suppression of the urine, with signs of uremic intoxication, together with a lower range of thermometry. The duration of the attack is, as a rule, short, terminating either with death or convalescence shortly after its inception. Death has been known to take place in the course of a few hours, and, on the other hand, recovery has been decided within a few days.

Like the other two varieties, a seizure of the above nature may follow the mildest and severest measures alike. It may besides occur in a man after the use of a catheter or sound to which he has been accustomed for years—like the case recorded by Sir Henry Thompson, where "a man with an old, tight stricture died on the third day after the passage of an instrument which had been used upon him very many times before."

Vomiting, severe chill, and suppression of urine came on early and were followed by death in a few hours. In this case the kidneys were examined, and their condition described as "congested and soft." Then those cases already referred to in the *Edinburgh Journal*, and the others narrated by Velpeau, are suggestive examples of this, the gravest form of the malady, arising from a comparatively insignificant cause. I do not include in this list those cases in which death results from chronic lesions of the kidneys, which have been fanned into action, as it were, by the depressing effects of ever so slight a surgical procedure.

Dr. Gross, Jr., states his point correctly, that "the mortality after operations on the urethra is generally due to chronic Bright's disease or pyelitis." For this reason, prudent surgery suggests the precaution, which I have of late invariably observed, of examining the urine and the heart in every case before operating.

I am aware that there is said to be a variety of kidney-disease—the "contracted granular," as it is called by some—in which sometimes neither casts nor albumen can be found. This I believe to be an error, and that persistent effort will, as a rule, be rewarded in microscopic examinations by the detection of the former. Fortunately, however, we are not compelled to rely upon these for our diagnosis, and are permitted to look for other reminders of this serious disease in such cases. It is a safe practice to suspect renal lesions in every case of old stricture. Of course, I do not mean to be understood as saying that renal disease of a serious character exists in every case of urethral stricture. I simply urge the suspicion as a means of enforcing caution, and of the surgeon's providing himself with ample protection. While not prepared to assert the amount of danger of operating upon the urethra when both albumen and tube-casts are to be found, nor the relative merit or security of various procedures, such as lithotomy or lithotrity, or the cutting, stretching, or rupturing of strictures, under similar circumstances, I am prepared, from analogy, to assert that *there is danger*. Then come occasions, however, when some kind of manipulation is necessary, and when, no matter how grave the kidney-disease, there

is a call for instant relief. For example, a patient presents himself for treatment, as happened to me only a few days ago, with Bright's disease, and, at the same time, a very close stricture in the penile urethra, which causes at times retention. The diagnosis of Bright's disease rested upon the detection of albumen and suspicious casts in the urine. In a case like this I at first divulsed with the Thompson urethrotome, and afterward divided with that of Otis. In both cases no chill or fever occurred. I am not disposed, though, to suggest such a course in all cases, but would think the process of gradual dilatation is, perhaps, the safer. Upon this subject a great deal more light is needed before a decision can be reached. We must see many cases, and have tried all the methods, lest we make unfair distinctions and draw unsound conclusions.

As to the prognosis in this disease, it is very favorable. A disease which I once regarded with much dread I now consider as comparatively simple. I feel that I am warranted in here stating that I have seen nearly one hundred cases, and it is upon these I found my opinion. When death occurs after Bright's disease, septicæmia, or pyæmia, when an operation upon the urethra has been recently performed, the complaint must be lodged where it properly belongs. As, after every or any other surgical operation, death may be caused by either of these conditions, so may it after the operations upon the genito-urinary tract.

Concerning the treatment I can be brief. The indications are to keep down the temperature with large doses of quinine and morphia, plenty of ice, and free sponging with simple or acidulated water. In addition to these, free purgation when indicated, and sustained vicarious action of the skin and bowels, are very serviceable. Whenever disposed, let the patient eat, but not otherwise.

Such is a brief *résumé* of some of my views upon the subject of the part reflex irritation plays in urethral fever, and I hope at some future time to inquire into the possible relationship which may be found to exist between this irritation (irritative fever) and the pyæmia so called. It will be curious to see how long the old orthodoxies of metastasis and transported

cells will be able to stand—how far the theories of blood-poisoning, uræmia, septicæmia, pyæmia, and the like, may have to give place to something less vague. Will they be compelled to surrender to the more modern doctrine of nerve-energy or nerve-irritation? At present, *a priori* arguments may be against it, but it must be weighed in the balance of experiment. It is here that we can use as *à propos* the old saying, "There is nothing true that is not possibly false, and there is nothing too absurd to be true."

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